Volume 102 1979

FEBS

European Journal of Biochemistry

Editorial Board

Honorary Chairman: Sir Hans Krebs (Oxford)

Editor-in-Chief: Claude Liébecq (Liège)

Associate Editors: Giorgio Bernardi (Paris), Lothar Jaenicke (Köln), Pierre Jollès (Paris), Cees Veeger (Wageningen)

Editors: F. Franěk (Praha), G. P. Georgiev (Moskva), H. G. Hers (Bruxelles), M. Lazdunski (Nice), J. G. Reich (Berlin), M. Revel (Rehovot), C. A. Vernon (London), H. G. Zachau (München), W. Zillig (Martinsried)

Special Advisor to the Editor-in-Chief: H. Mayer-Kaupp (Heidelberg)

Advisory Board

R. Banerjee (Paris), E. K. F. Bautz (Heidelberg), H. Beaufay (Bruxelles), L. D. Bergelson (Moskva), U. Bertazzoni (Pavia), L. Boross (Szeged), F. Bossa (Roma), E. M. Bradbury (Davis), R. Braun (Bern), H. Buc (Paris), P. H. W. Butterworth (London), E. Carafoli (Zürich), P. Chambon (Strasbourg), M. J. Clemens (London), K. Decker (Freiburg i. Br.), G. H. de Haas (Utrecht), H. Dutler (Zürich), J.-P. Ebel (Strasbourg), H. Eisenberg (Rehovot), C. Gancedo (Madrid), P. B. Garland (Dundee), J.-M. Ghuysen (Liège), A. A. Hadjiolov (Sofiya), A.-L. Haenni (Paris), D. O. Hall (London), D. H. Hayes (Paris), E. J. M. Helmreich (Würzburg), P. Hemmerich (Konstanz), B. Hirt (Epalinges), E. Hofmann (Leipzig), T. Jovin (Göttingen), M. Ya. Karpeisky (Moskva), H. Klostermeyer (Freising-Weihenstephan), G. L. E. Koch (Cambridge), C. G. Kurland (Uppsala), U. G. Lagerkvist (Göteborg), A. Levitzki (Jerusalem), R. Lontie (Leuven), O. Lüderitz (Freiburg i. Br.), S. Magnusson (Aarhus), G. Marbaix (Rhode-St-Genèse), C. Milstein (Cambridge), R. Monier (Villejuif), K. Mosbach (Lund), E. A. Newsholme (Oxford), K. Nierhaus (Berlin), D. Oesterhelt (Würzburg), B. Parthier (Halle), T. A. J. Payens (Ede), I. Pecht (Rehovot), R. J. Planta (Amsterdam), J. Ricard (Marseille), R. Rigler (Stockholm), H. Rüterjans (Münster), C. Saccone (Bari), A. Schellenberger (Halle), M. C. Scrutton (London), A. Sentenac (Saclay), S. Shaltiel (Rehovot), N. Sharon (Rehovot), H. Sies (Düsseldorf), V. Skaric (Zagreb), H. D. Söling (Göttingen), F. Šorm (Praha), F. S. Steven (Manchester), H. Sund (Konstanz), J. M. Tager (Amsterdam), W. Tanner (Regensburg), R. Thauer (Marburg), R. Thomas (Rhode-St-Genèse), K. F. Tipton (Dublin), A. Trebst (Bochum), D. R. Trentham (Philadelphia), V. Ullrich (Homburg), K. van Dam (Amsterdam), D. Vázquez (Madrid), J. H. Weil (Strasbourg), V. P. Whittaker (Göttingen), M. Wikström (Helsinki), M. Wilchek (Rehovot), E. Wintersberger (Wien), K. W. A. Wirtz (Utrecht), L. Wojtczak (Warszawa), A. V. Xavier (Lisboa), M. G. Yates (Brighton)

Published by Springer-Verlag Berlin Heidelberg New York
on behalf of the Federation of European Biochemical Societies

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is vested in the Federation of European Biochemical Societies.
The use of general descriptive names, trade names, trade marks, etc., in this publication, even if the former are not specifically identified, is not to be taken as a sign that such names are exempt from the relevant protective laws and regulations and may accordingly be used freely by anyone.

Springer Verlag · Berlin · Heidelberg · New York

Printers: Wiesbadener Graphische Betriebe GmbH, Wiesbaden

Printed in Germany

Copyright © by the Federation of European Biochemical Societies 1979

Volume 102 1979

Table of Contents

No. 1 1–314 issued on December 3, 1979
No. 2 315–636 issued on December 17, 1979

Enzyme Nomenclature: Announcement. Nomenclature of Iron-Sulfur Proteins: Corrections to Recommendations 1978. Nomenclature of Organic Chemistry – Section H – Isotopically Modified Compounds: Amendments to Recommendations 1977
International Union of Biochemistry, and International Union of Pure and Applied Chemistry 315

Nucleic Acids, Protein Synthesis, and Molecular Genetics

Production of a Soluble Form of Fumarate Reductase by Multiple Gene Duplication in *Escherichia coli* K 12
S. T. Cole and J. R. Guest 65

Mechanism of Action of Aminoglycoside Antibiotics. Binding Studies of Tobramycin and Its 6′-*N*-Acetyl Derivative to the Bacterial Ribosome and Its Subunits
F. Le Goffic, M.-L. Capmau, F. Tangy, and M. Baillarge 73

Requirement for Ribosomal Protein BM-L11 in Stringent Control of RNA Synthesis in *Bacillus megaterium*
M. J. R. Stark and F. Cundliffe 101

Genes and mRNAs Coding for Zein Polypeptides in *Zea mays*
A. Viotti, E. Sala, R. Marotta, P. Alberi, C. Balducci, and C. Soave 211

Complete Inactivation and Labeling of Methionyl-tRNA Synthetase by Periodate-Treated Initiator tRNA in the Presence of Sodium Cyanohydridoborate
C. Hountondji, G. Fayat, and S. Blanquet 247

Mutagenic DNA Repair: Insertion of Nucleotides Opposite Non-coding Template Structures by a Reversed 3′–5′ Exonuclease Reaction? A Hypothesis
C. Schroeder 291

Nuclear Mutants of *Neurospora crassa* Temperature-Sensitive for the Synthesis of Cytochrome aa_3. Mitochondrial Protein Synthesis and Analysis of the Polypeptide Composition of Cytochrome *c* Oxidase
F. E. Nargang, H. Bertrand, and S. Werner 297

Nucleic Acid Binding and Unfolding Properties of Ribosomal Protein S1 and the Derivatives S1-F1 and m1-S1
J. O. Thomas, M. Boublik, W. Szer, and A. R. Subramanian 309

Chloroplast Elongation Factors are Synthesized in the Chloroplast
O. Ciferri, G. Di Pasquale, and O. Tiboni 331

Characterization of Preribosomal Ribonucleoprotein Particles from *Tetrahymena pyriformis*
C. Rodrigues-Pousada, M. L. Cyrne, and D. Hayes 389

Inhibition of DNA Synthesis in Mammalian Cells by Daunomycin. Preferential Inhibition of Replicon Initiation at Low Concentrations
J. A. A. Schellinx, P. A. Dijkwel, and F. Wanka 409

Androgenic Regulation of Messenger RNA Sequence Complexity in Accessory Sexual Tissues of the Male Rat Studied with Fractionated Complementary DNA
S. J. Higgins, M. G. Parker, F. M. Fuller, and P. J. Jackson 431

HeLa Cell Cytoplasmic mRNA Contains Three Classes of Sequences: Predominantly Poly(A)-Free, Predominantly Poly(A)-Containing and Bimorphic
C. Milcarek 467

Crystallization of Bacteriophage MS2
W. Min Jou, A. Raeymaekers, and W. Fiers 589

Secondary Structure of the 5′ End of Bacteriophage MS2 RNA. Methoxyamine and Kethoxal Modification
D. Iserentant and W. Fiers 595

Protein Chemistry and Structure

The Protein-Chromophore Bond in B Phycoerythrin from *Porphyridium cruentum*. Radiosulfur Labeling Experiments
E. Köst-Reyes and H.-P. Köst 83

X-Ray Studies of the Binding of Cibacron Blue F3GA to Liver Alcohol Dehydrogenase
J.-F. Biellmann, J.-P. Samama, C. I. Bränden, and H. Eklund 107

The Primary Structure of the Coat Protein of Alfalfa Mosaic Virus Strain VRU. A Hypothesis on the Occurrence of Two Conformations in the Assembly of the Protein Shell
A. Castel, B. Kraal, J. M. De Graaf, and L. Bosch 125

^{1}H Nuclear-Magnetic-Resonance Studies of the Porcine-Pancreatic Secretory Trypsin Inhibitor at 270 MHz
A. De Marco, E. Menegatti, and M. Guarneri 185

Immunochemical Characterization of the Basement Membrane Glycoprotein Laminin
H. Rohde, G. Wick, and R. Timpl 195

Glutathione Reductase from Human Erythrocytes. Amino-Acid Sequence of a Major Fragment that Links the FAD, NADP and Interface Domains
E. Schiltz, R. Blatterspiel, and R. Untucht-Grau 269

Evidence by Chemical Modification for the Involvement of One or More Tryptophanyl Residues of Bovine Antithrombin in the Binding of High-Affinity Heparin
I. Björk and K. Nordling 497

Structural Characterization by Nuclear Magnetic Resonance of a Reactive-Site ^{13}Carbon-labelled Basic Pancreatic Trypsin Inhibitor with the Peptide Bond Arg-39–Ala-40 Cleaved and Arg-39 Removed
R. Richarz, H. Tschesche, and K. Wüthrich 563

The 5-S RNA Binding Protein from Yeast (*Saccharomyces cerevisiae*) Ribosomes. Evolution of the Eukaryotic 5-S RNA Binding Protein
R. N. Nazar, M. Yaguchi, G. E. Willick, C. F. Rollin, and C. Roy 573

Enzymology

Properties of Purified Calf Thymus Poly(Adenosine Diphosphate Ribose) Polymerase. Comparison of the DNA-Independent and the DNA-Dependent Enzyme
C. Niedergang, H. Okazaki, and P. Mandel 43

The Specificity of the S_1 and S_2 Subsites of Elastase
A. Thomson and S. B. Kapadia 111

Tryptophan Synthase from *Saccharomyces cerevisiae* Is a Dimer of Two Polypeptide Chains of M_r 76000 Each
M. Dettwiler and K. Kirschner 159

Purification of Tryptophan Synthase from *Saccharomyces cerevisiae* and Partial Activity of Its Nicked Subunits
P. Bartholmes, H. Böker, and R. Jaenicke 167

Thymidylate Synthetase from *Escherichia coli* K12. Purification and Dependence of Kinetic Properties on Sugar Conformation and Size of the 2′ Substituent
T. Haertlé, F. Wohlrab, and W. Guschlbauer 223

Hydrolysis of Aryl β-D-Glucopyranosides and β-D-Xylopyranosides by an Induced β-D-Glucosidase from *Stachybotrys atra*
C. K. De Bruyne, G. M. Aerts, and R. L. De Gussem 257

Crystallization and Properties of Cathepsin B from Rat Liver
T. Towatari, Y. Kawabata, and N. Katunuma 279

Purification and Properties of Hydrogenase from *Megasphaera elsdenii*
C. Van Dijk, S. G. Mayhew, H. J. Grande, and C. Veeger 317

1,4-α-Glucan Phosphorylase from the Slime Mold *Physarum polycephalum*. Purification, Physico-Chemical and Kinetic Properties
W. Nader and J.-U. Becker 345

Purification and Properties of a Phosphorylase (Phosphoprotein) Phosphatase Associated with an Alkaline Phosphatase of M_r 35000 from Bovine Adrenal Cortex
H.-C. Li 363

Isolation and Characterisation of Peptide Hydrolases from the Maize Root
J. D. Shannon and W. Wallace 399

Ligand Competition Curves as a Diagnostic Tool for Delineating the Nature of Site-Site Interactions: Theory
Y. I. Henis and A. Levitzki 449

Mechanism of Carbamoyl-Phosphate Synthetase. Properties of the Two Binding Sites for ATP
H. G. Britton, V. Rubio, and S. Grisolia 521

Mechanism-Controlled Stereospecificity. Acylation of Subtilisin with Enantiomeric Alkyl and Nitrophenyl Ester Substrates
L. Polgár and J. Fejes 531

Dissociation of Thyroglobulin Iodination and Hormone Synthesis Catalyzed by Peroxidases
A. Virion, J. Pommier, and J. Nunez 549

Carbohydrates, Lipids and Other Natural Products

Bile Salt Binding to Serum Components. Taurocholate Incorporation into High-Density Lipoprotein Revealed by Photoaffinity Labelling
W. Kramer, H.-P. Buscher, W. Gerok, and G. Kurz 1

Structure of a New Saponin: Chrysantellin A from *Chrysanthellum procumbens* Rich.
M. Becchi, M. Bruneteau, M. Trouilloud, H. Combier, J. Sartre, and G. Michel 11

On the Structure of the Teichoic Acid from the Cell Wall of *Streptomyces antibioticus* 39. Localization of the Phosphodiester Linkages and Elucidation of the Monomeric Units Structure by Means of ^{13}C-Nuclear-Magnetic-Resonance Spectroscopy
A. S. Shashkov, M. Sh. Zaretskaya, S. V. Yarotsky, I. B. Naumova, O. S. Chizhov, and Z. A. Shabarova 477

Structural Features of the Carbohydrate Units of Plasma Glycoproteins
J. Finne and T. Krusius 583

Physical Biochemistry

Conformation of Cobrotoxin in Aqueous Solution as Studied by Nuclear Magnetic Resonance
T. Endo, F. Inagaki, K. Hayashi, and T. Miyazawa 417

Membranes and Bioenergetics

Solubilization and Physical Characterization of the Adenylate Cyclase from Rat-Liver Plasma Membranes
D. Stengel and J. Hanoune 21

Effects of Amphiphiles on Structure and Activity of Human Erythrocyte Membrane Acetylcholinesterase
T. Wiedmer, C. Di Francesco, and U. Brodbeck 59

The Effect of Some Inhibitors of Photosynthetic Electron Transport on the Kinetics of Redox Changes of the Reaction Centre Chlorophyll of Photosystem I (P700) and of Cytochrome *f* at Sub-Zero Temperatures
L. F. Olsen and R. P. Cox 139

A Novel ATP-Driven Glucose Transport System in *Escherichia coli*
E. F. Wagner, J. D. Fabricant, and M. Schweiger 231

Kinetic Study of a Phosphoryl Exchange Reaction between Fructose and Fructose 1-Phosphate Catalyzed by the Membrane-Bound Enzyme II of the Phospho*enol*pyruvate-Fructose 1-Phosphotransferase System of *Bacillus subtilis*
J. Perret and P. Gay 237

Characterization of the Membrane-Bound Inorganic Pyrophosphatase in *Rhodospirillum rubrum*
H. Randahl 251

Chlorophyll-Protein Complexes from Thylakoids of a Mutant Barley Lacking Chlorophyll *b*
J. C. Waldron and J. M. Anderson 357

Uncoupling Action of Amytal in Membrane Vesicles from *Escherichia coli*
J. Boonstra, S. Ottema, H. J. Sips and W. N. Konings 383

Cyanine Dye as Monitor of Membrane Potentials in *Escherichia coli* Cells and Membrane Vesicles
L. Letellier and E. Shechter 441

The Binding of 8-Anilinonaphthalene-1-sulphonate to a Fixed Concentration of Unenergised and Succinate-Energised Submitochondrial Particles
N. Gains and A. P. Dawson 483

An Anti-(Signal Peptide) Antibody: Purification, Properties and Use as a Conformational Probe
D. Baty and C. Lazdunski 503

Transport of D-Lactate in Perfused Rat Liver
A. J. Schwab, A. Bracht, and R. Scholz 537

ΔpH Induced Calcium Fluxes in Rat Liver Mitochondria
P. Bernardi and G. F. Azzone 555

Specific Labeling of a Phosphate-Transporting Protein from Rat-Liver Mitochondria by [^{203}Hg]Mersalyl
H.-D. Hofmann and B. Kadenbach 605

Regulation of Ca^{2+} Efflux from Kidney and Liver Mitochondria by Unsaturated Fatty Acids and Na^+ Ions
I. Roman, P. Gmaj, C. Nowicka, and S. Angielski 615

Cellular Biochemistry and Metabolism

A Pathway of Polygalactosamine Formation in *Aspergillus parasiticus*: Enzymatic Deacetylation of *N*-Acetylated Polygalactosamine
Y. Araki, H. Takada, N. Fujii, and E. Ito 35

The Stimulation of the Mitochondrial Uncoupler-Dependent ATPase in Isolated Hepatocytes by Catecholamines and Glucagon and Its Relationship to Gluconeogenesis
M. A. Titheradge, J. L. Stringer, and R. C. Haynes, Jr 117

Pattern of Protein Phosphorylation in Intact Stimulated Cells: Thyrotropin and Dog Thyroid
R. Lecocq, F. Lamy, and J. E. Dumont 147

Inhibition of Lymphocyte Proliferation by Polyamines Requires Ruminant-Plasma Polyamine Oxidase
J. C. Allen, C. J. Smith, J. I. Hussain, J. M. Thomas, and J. M. Gaugas 153

C_{27} Bile Acids in Infants with Coprostanic Acidemia and Occurrence of a 3α,7α,12α-Trihydroxy-5β-C_{29} Dicarboxylic Bile Acid as a Major Component in Their Serum
G. G. Parmentier, G. A. Janssen, E. A. Eggermont, and H. J. Eyssen 173

High Number of High-Affinity Binding Sites for (−)-[^{3}H]Dihydroalprenolol on Isolated Hamster Brown-Fat Cells. A Study of the β-Adrenergic Receptors
P. Svoboda, J. Svartengren, M. Snochowski, J. Houštěk, and B. Cannon 203

A Toxin Purified from the Venom of Black Widow Spider Affects the Uptake and Release of Radioactive γ-Amino Butyrate and *N*-Epinephrine from Rat Brain Synaptosomes
A. Grasso and M. I. Senni 337

Effects of Gibberellic Acid and of Tunicamycin on Glycosyl-Transferase Activities and on α-Amylase Secretion in Barley
H. Schwaiger and W. Tanner 375

Premature Appearance of Hepatic Phospho*enol*pyruvate Carboxykinase in Fetal Rats, Not Mediated by Adenosine 3′:5′-Monophosphate
D. Mencher, D. Shouval, and L. Reshef 489

A Method for the Estimation of Esterase Synthesis and Degradation and its Application to Evaluate the Influence of Insulin and Glucagon
E. Heymann, R. Mentlein, R. Schmalz, C. Schwabe, and F. Wagenmann 509

Aerobic Lactate Synthesis by Cardiac Muscle
P. Strong, R. Mullings, and J. A. Illingworth 625

Developmental Biochemistry and Immunology

Hormonal Regulation of Phospho*enol*pyruvate Carboxykinase in Cultured Foetal Hepatocytes from the Rat
G. S. Bulanyi, J. G. Steele, M. C. McGrath, G. C. T. Yeoh, and I. T. Oliver 93

Indexed in Current Contents